

Required Revisions to the Final Feasibility Study

Required Revisions Remaining from the Draft-Final Feasibility Study						
Comment #	Section #	Page #	Original Comment	EWG Response	Required Revision	EWG Comment Response
12	General		Capping should not be used in areas that would require the use of armoring to prevent scour. If scour protection is considered then mitigation of lost habitat needs to be added to the cost estimate.	All caps will have armor layers as necessary. Caps will be covered with "fish mix" or similarly suitable habitat material as required. Clarification was added to Section 7.2.5.1. Habitat was already listed as a consideration in Section 8.1.2.2 and Appendix D, Part 2 (Section 2).	The revisions made were not sufficient to address the original comment. Make the following changes:  §7.2.5.1; pg. 7-18 "The surface layer of caps in intertidal areas are expected to contain suitable substrate to support benthic organism <u>and fish</u> communities-including clams."  §8.1.2.2; pg. 8-13 "The cap design will be further refined in remedial design, and could include the use of thinner caps amended with sorptive or reactive materials where needed to meet breakthrough performance requirements, and refinement of location-specific propwash forces and armoring needs, <u>and a surface habitat layer to support benthic organism and fish communities.</u> "	a) Revised accordingly. b) Revised accordingly.
42	ES	9	Make to following addition: "Excess Cancer Risk refers to the additional risk of developing cancer due to exposure to a toxic substance incurred over a defined exposure period <u>in this case lifetime exposure.</u> "	Added	Revision was not made. Make the following change: "Excess Cancer Risk refers to the additional risk of developing cancer due to exposure to a toxic substance incurred over a defined exposure period <u>in this case lifetime exposure.</u> "	Revised accordingly.

New Required Revisions					
Comment #	Section #	Page #	Comment		EWG Comment Response
1	Executive Summary; Table 1	13	Remove table footnote a.		Deleted footnote "a".
2	Executive Summary; Table 1	13	Remove footnote 5.		Deleted footnote "5".
3	Executive Summary; Table 1	13	Remove the definitions for "PQL" and "SCUM"		Deleted definitions.

New Required Revisions					
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4	List of Acronyms and Abbreviations	xviii to xxiii	Remove the entries for "90/90 UTL" and "SCUM".	Removed 90/90UTL and retained, as appropriate, based on final text that is consistent with the EPA-approved Appendix A.	
5	1.4.2	1-9	Remove the 90/90 UTL definition.	Deleted definition.	
6	2.10.4	2-22	Make the following changes to the end of the second paragraph: "The upstream contributions and lateral input data are further evaluated in Section 5 and are used to estimate net incoming solids concentrations for the purposes of the recontamination evaluation. In addition, the upstream contributions and lateral inputs are used in Appendix A. <del>to evaluate the technical possibility of achieving natural background-based PRGs."</del>	Change not made, for consistency with EPA-approved Appendix A.	
7	3.2 and associated subsections and tables	3-9	Recalculate cancer and non-cancer risks for cPAHs using the recent (2017) IRIS update for benzo[a]pyrene. This includes incorporating where appropriate the revised/new oral cancer slope factor, inhalation unit risk, non-cancer oral reference dose, and the inhalation reference concentration. Modify text, tables, and figures to reflect the revised cancer and non-cancer risk values.	Updated Section 3 text and applicable tables to reflect the cPAH update. Changes were discussed with EPA on August 13 (email), November 15 (meeting), and December 21 and 26, 2018 (email and response). Also, updated other FS sections (Sections 4, 6, 9, 10, 11, ES) for consistency with Section 3 changes.	
8	Table 4-1	4-3	For the Fish Tissue Quality / Federal cell: Remove this citation. The CFR cited is incorrect and EPA could not locate an appropriate FDA regulation ARAR.	Revised accordingly. Entire row deleted because there is no longer a regulatory citation in the row.	
9	Table 4-1	4-3	For the Surface Water Quality / State cell, change: "Surface Water Quality Standards (RCW <del>90-4890.48</del> , WAC 173-201A)"	Revised accordingly.	
10	Table 4-1	4-3	For the Waste Treatment Storage and Disposal / Federal cell, change: "RCRA (42 USC <del>7401-76426901-6992k</del> ; 40 CFR <del>264 and 265260-279</del> ; 42 USC <del>6901-92k</del> )"	Revised accordingly.	
11	Table 4-1	4-3	For the Waste Treatment Storage and Disposal / State cell, change: "Dangerous Waste Regulations (RCW <del>70.107105</del> ; WAC <del>173-60-040-050173-303</del> )"	Revised accordingly.	
12	Table 4-1	4-3	For the Discharge of dredged/fill material... / Federal cell, change: "Clean Water Act (Sections 401, 404; 33 USC <del>1251-13841341, 1344</del> ; 40 CFR <del>232, 231, 404121.2, 230, 231</del> ; 33 CFR <del>320-330320, 322-3, 328-30</del> ); Rivers and Harbors Act (33 USC 401 et seq)"	Revised accordingly.	
13	Table 4-1	4-3	For the Discharge of dredged/fill material... / State cell, change: "Hydraulic Code Rules (RCW <del>75.5565</del> ; WAC 220-110)"	This should be RCW 77.55, Construction Projects in State Waters. Change not made.	
14	Table 4-1	4-3	For the Open-water disposal... / State cell, change: "Dredged Material Management Program (RCW <del>79.9079.105.500</del> ; WAC 332-30-166 (3))"	Revised accordingly.	
15	Table 4-1	4-3	For the Critical (or Sensitive) Area / State cell, change: "Growth Management Act (RCW <del>37.70336.70A</del> )"	Revised accordingly.	

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16	Table 4-1	4-3	For the Habitat for Fish, Plants, or Birds / Federal cell, change: "Clean Water Act (Section 404(b)(1)); U.S. Fish and Wildlife Mitigation Policy (44 CFR 764481 Fed. Reg. 83440, Nov. 21, 2016); U.S. Fish and Wildlife Coordination Act (16 USC 661 et seq); Migratory Bird Treaty Act (16 USC 703-712)"	The 2016 Mitigation Policy rule was withdrawn effective July 30, 2018: <a href="https://www.federalregister.gov/documents/2018/07/30/2018-16172/us-fish-and-wildlife-service-mitigation-policy">https://www.federalregister.gov/documents/2018/07/30/2018-16172/us-fish-and-wildlife-service-mitigation-policy</a> . Mitigation Policy reference deleted.	
17	4.3.1	4-15	As discussed at the October 20, 2017 meeting with EWG, make the following change to the second paragraph: "The CSL (higher) risk-based values are based on an estimated lifetime excess risk of less than or equal to $1 \times 10^{-5}$ for individual carcinogens, and the same as the SCO for multiple carcinogens or exposure pathways, and non-carcinogens. <del>The SCLs for RAOs 1 and 2 are set to the SCO and applied over appropriate exposure areas (i.e., site wide for seafood consumption and netfishing exposure scenarios and clamming areas for tribal clamming scenarios).</del> "	Revised accordingly.	
18	4.3.1	4-15	Make the following revisions to Footnote 38: "The SMS define "technically possible" as "capable of being designed, constructed and implemented in a reliable and effective manner, regardless of cost." WAC 173-204-505(23). Ecology guidance, provided in the Sediment Cleanup Users Manual (SCUM)-II (Ecology 2017), confirms that this definition includes both the ability to attain, and to reliably and effectively maintain, the natural background cleanup level by stating that upward adjustment of the cleanup level should be based on "whether it is technically possible to achieve and maintain the cleanup level at the applicable point of compliance." {SCUM-II 7.2.3.1, page 7-4}."	Change not made, for consistency with EPA-approved Appendix A.	
19	4.3.1	4-15	Make the following changes to Footnote 39: "However, EPA disagrees with the statistical method used by Ecology to determine natural background concentrations."	Revised accordingly.	
20	4.3.1	4-16	Make the following change: "Following completion of source control and remediation efforts, remaining surface sediments in the EW OU are not currently predicted to attain all natural background- <del>or</del> PQL-based PRGs for protection of human health for seafood consumption (RAO 1), due to model input parameters that assume ongoing contribution of contaminants from diffuse, non-point sources upstream of the EW."	Revised accordingly.	
21	4.3.1	4-16	For clarity, make the following changes to the second paragraph: "However, <del>CERCLA</del> compliance with MTCA/SMS ARARs may be attained or waived through one or more of the following pathways:"	Revised accordingly.	

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22	4.3.1	4-16	Make the following changes to Footnote 40: "Source control and sediment cleanup measures are assumed <u>for FS modeling purposes</u> to effectively address discrete sources of contamination, leaving sediment concentrations that are <u>assumed to be</u> "primarily attributable to diffuse sources, such as atmospheric deposition or storm water, not attributable to a specific source or release." WAC 173-204-505(16)."	Revised accordingly.	
23	4.3.3	4-20	Make the following change: "More stringent state standards must be met by a CERCLA remedial action or waived by EPA at or before completion of the remedial action. <del>The adjustment of cleanup standards for total PCBs and dioxins/furans from natural background to regional background is discussed in Appendix A.</del> "	Change not made, for consistency with EPA-approved Appendix A.	
24	4.3.3.1	4-20 to 4-21	Make the following changes: "The statistical methods used to develop background concentrations are important for consistency with other regional sites and for measuring compliance. <del>Two statistical methods are presented in Table 4-2, for consistency with the LDW cleanup and the SMS ARAR. The LDW FS presented EPA calculates natural background concentrations based on the UCL95 from the background population, as was also presented in the LDW FS (AECOM 2012). Ecology uses an alternate method for determining natural background concentrations, which was established in Ecology guidance (Ecology 2017). However, EPA does not consider Ecology guidance to be an ARAR. EPA disagrees with the statistical method used by Ecology to determine natural background concentrations. Use of EPA's preferred statistical method results in lower values for natural background than those produced using Ecology's method. Natural background values determined using EPA's statistical method are used in this FS, sets background concentrations for SMS by using the 90/90 UTL<sup>45</sup> from the natural background population. Furthermore, Ecology uses a collective dataset (referred to as <i>Bold Plus</i>) to establish natural background in Puget Sound. This <i>Bold Plus</i> dataset includes: 1) the OSV <i>Bold</i> Survey dataset (DMMP-2009); and 2) a dataset from Ecology-approved reference areas and additional areas Ecology considers similar to reference areas, as presented in Appendix I of the Sediment Cleanup Users Manual (SCUM) II (Ecology 2017). Ecology uses the <i>Bold Plus</i> dataset to calculate natural background, whereas the LDW FS used the OSV <i>Bold</i> Survey dataset. Summary statistics for natural background calculations are presented in Table 4-2 for each of the four human health risk driver COCs.</del> "	Revised using these redlines and adjusting for consistency with final text in EPA-approved Appendix A.	
25	4.3.3.1	4-21	Remove footnote 45.	Deleted footnote.	

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26	4.3.3.1	4-21	Make the following changes to the "Natural Background for Arsenic in Sediment" paragraph: "Concentrations ranged from 1.1 to 21 mg/kg dw, with a mean concentration of 6.5 mg/kg dw, a 90th percentile of <del>12</del> <u>11</u> mg/kg dw. Ecology has set natural background for arsenic at 11 mg/kg dw using the 90/90 UTL from the <i>Bold Plus</i> dataset (Ecology 2017, Table 10-1). Calculating the UCL95 of the OSV <i>Bold</i> Survey dataset results in a natural background value of 7 mg/kg dw."		Revised accordingly.
27	4.3.3.1	4-21	Make the following changes to the "Natural Background for Total PCBs in Sediment" paragraph: "Using the congener results, total PCB concentrations ranged from 0.01 to 10.6 µg/kg dw, with a mean of 1.2 µg/kg dw a 90th percentile of <del>2.7</del> µg/kg dw. Ecology set a total PCB natural background concentration of 3.5 µg/kg dw in SCUM-II. Calculating the UCL95 of the OSV <i>Bold</i> Survey dataset results in a natural background value of 2 µg/kg dw."		Revised accordingly.
28	Table 4-2	4-22	a) Remove the last column labeled "SMS-defined Natural Background (rounded value) <sup>c</sup> ," b) Make the following changes to Note 1: "The summary statistics above are for the dataset collected throughout Puget Sound by DMMP in 2008 and referred to as the OSV <i>Bold</i> Survey ( <i>Bold</i> dataset; DMMP 2009), with the exception of the SMS background values, which are based on the <i>Bold Plus</i> dataset (Ecology 2017)." c) Remove the footnote 'c'. d) Remove the definition of "90/90 UTL"		a) Deleted column. b) Revised note accordingly. c) Deleted footnote "c". d) Removed accordingly.
29	4.3.3.1	4-23	Make the following changes to the "Natural Background for cPAHs in Sediment" paragraph: "Concentrations ranged from 1.3 to 57.7 µg TEQ/kg dw, with a mean concentration of 7.1 µg TEQ/kg dw, a 90 <sup>th</sup> percentile of 15 µg TEQ/kg dw. Ecology has set a natural background value of <del>21</del> µg TEQ/kg dw using the 90/90 UTL of the <i>Bold Plus</i> dataset (Ecology 2017, Table 10-1). Using the UCL95 of the OSV <i>Bold</i> Survey dataset results in a natural background value of 9 µg TEQ/kg dw."		Revised accordingly.
30	4.3.3.1	4-23	Make the following changes to the "Natural Background for Dioxins/Furans in Sediment" paragraph: "Concentrations ranged from <del>0.20</del> <u>2.3</u> to 11.6 ng TEQ/kg dw, with a mean of 1.4 ng TEQ/kg dw (Table 4-2), a 90th percentile of <del>2.82</del> <u>2</u> ng TEQ/kg dw. Ecology has set a natural background value of 4 ng TEQ/kg dw using the 90/90 UTL of the <i>Bold Plus</i> dataset (Ecology 2017, Table 10-1). Using the UCL95 of the OSV <i>Bold</i> Survey dataset results in a natural background value of 2 ng TEQ/kg dw."		Revised accordingly.

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31	4.3.3.2	4-23	Make the following changes: <del>"Regional background for a geographic area including the EW OU has not been established by Ecology. Ecology is currently developing an approach to collect additional information to establish regional background for the LDW, which may be suitable for re-evaluation of attainment of ARARs for the EW selected alternative. Appendix A discusses the justification under SMS for the adjustment of cleanup levels for PCBs and dioxins/furans based on the considerations in WAC 173-204-560(4). Because regional background has not been established for the EW, the PRGs for RAO 1 (based on complying with SMS as an ARAR) are set at the SCO for both PCBs and dioxins/furans (based on natural background and the PQL, respectively)."</del>	Revised per comment; however, sentence referencing Appendix A retained.	
32	4.3.4	4-24	Make the following change to the second paragraph: <del>"These results reflect the range of what the laboratories were able to achieve given the composition of, and matrix complexity associated with, EW OU sediment samples. In addition, Ecology has developed PQLs on a programmatic level in SCUM II (Table 11-1; Ecology 2017) that are being used at contaminated sediment sites in the State of Washington. These values can be higher than laboratory analytical quantitation limits because they also consider the limits of accuracy that can be achieved in sampling and enforcement rather than analytical methods alone."</del>	Revised accordingly.	
33	Table 4-3	4-25	In Table 4-3: a) Remove the column "Ecology PQL". b) Remove footnote "b". c) Remove the column "Ecology's method 90/90 UTL". d) Remove footnote "c". e) Remove the Ecology PQL and natural background values from the "Preliminary Remediation Goal" columns (i.e. 3.5 for total PCBs, 11 for arsenic, and 5 for dioxins/furans). f) Remove footnote "l". g) Remove the definition of "90/90 UTL"	a) Deleted column. b) Removed footnote "b". c) Deleted column. d) Removed footnote "c". e) Removed values accordingly. f) Removed footnote "l". g) Removed definition.	

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34	4.4	4-29	In the first paragraph, make the following changes: “When selecting PRG(s) for each RAO, the higher value of the RAO RBTC, background, or PQL is selected. Regional background concentrations have not been established for the EW and PQLs were not found to influence selection of the PRGs (i.e., all PRGs are above PQLs) but Appendix A evaluates the criteria for adjustment of the cleanup level above natural background or PQL-based cleanup levels for PCBs and dioxin/furans. Following completion of the final FS, upward adjustment of the cleanup level <del>may</del> can occur once Ecology determines a regional background concentration <del>is determined</del> for the EW area. <sup>46</sup> The RAOs and PRGs are considered in selecting the RALs in Section 6 of the FS. Section 9 compares estimated concentrations of risk driver COCs following sediment remediation to PRGs as one measure of the effectiveness of the remedial alternatives.”	Revised per comment; however, reference to Appendix A retained.	
35	4.4	4-29	Remove Footnote 46.	Footnote retained, for consistency with EPA-approved Appendix A.	
36	4.4	4-30	Make the following changes: “For RAO 1, the numerical PRGs for total PCBs are set to natural background because the sediment RBTCs <sup>47</sup> for the RME seafood consumption scenarios are below natural background. <del>Two natural background estimates are provided for total PCBs because of the differing estimates using Ecology and LDW methodology.</del> For dioxins/furans, numerical PRGs are based on natural background and the PQL because these values are below the sediment RBTCs for the RME seafood consumption scenarios. The natural background concentration is estimated using the LDW methodology. <del>For the Ecology method, the PQL reported by Ecology for dioxins/furans is above the natural background estimate, so the numerical PRG is provided using the PQL.</del> cPAH PRGs were not identified for the human health seafood consumption pathway (RAO 1).”	Revised accordingly.	
37	4.4	4-31	Make the following changes: “The PRGs for the cPAHs are based on their RBTCs. The arsenic PRG for RAO 2 is based on natural background because the RBTCs at $1 \times 10^{-6}$ excess cancer risk threshold are below this value. <del>Two natural background estimates are provided for arsenic because of the differing estimates using Ecology and LDW methodology.</del> ”	Revised accordingly. Clarified direct contact scenarios consistent with updated cPAH risk calculations.	
38	6.1	6-2	Make the following changes to the third bullet: “The PRGs for RAO 1 for PCBs and dioxins/furans are based on natural background and <del>PQL</del> concentrations. However, <del>as presented in Appendix A, it is</del> may not technically possible to achieve these PRGs for these two risk drivers for the following reasons:”	“As presented in Appendix A” retained for consistency with Appendix A. Other edits made.	

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39	6.1	6-3	Make the following change to the bullet: "There are constructability constraints within the EW (e.g., overwater structures and bridges; Appendix A), which affects the concentrations that can be achieved following cleanup."	Change not made, for consistency with EPA-approved Appendix A.	
40	6.2.1	6-10	Remove footnote 80: "Per Ecology SCUM II (Ecology 2017), the lowest-apparent-effect threshold (LAET) is used as the dry weight equivalent to SQS for compounds with organic carbon-normalized criteria for samples outside of the appropriate total organic carbon range."	Text deleted as directed, but text added that LAET values are found in SCUM II, as this is a true statement, and SCUM II is the only place to find the dry weight equivalents.	
41	6.2.2	6-11	Make the following changes: "The total PCB and dioxin/furan PRGs for RAO 1 are based on natural background concentrations and PQLs in this FS. Because PRGs based on either natural background or PQLs are not expected to be achieved (Appendix A), RALs were developed to reduce sitewide SWACs which would, in turn, reduce associated risks for RAO 1."	Reference to Appendix A reinstated. Other revisions performed.	
42	Table 6-1	6-15	a) Remove the Ecology PQL and natural background values from the "PRG" column (i.e. 3.5 for total PCBs, 11 for arsenic, and 5 for dioxins/furans). b) Make the following changes to footnote f: "SWACs for PCBs may be higher than indicated due to mixing of sediment left behind due to structural offsets (e.g., underpier areas, keyways, and associated dredging offsets) and dredge residuals (Appendix A). The screening RAL of 5.0 mg/kg OC also achieved similar SWACs (Appendix L)."	a) Revised accordingly. b) Footnote not revised, for consistency with EPA-approved Appendix A.	
43	9.1.1.2	9-3	Make the following changes to footnote 94: "Appendix A describes the SMS compliance process <u>indicates that</u> through which the selected alternative will meet the SMS ARAR over time either by meeting the PRGs in a reasonable restoration timeframe, or by adjusting the SCL upward once regional background levels are established for the geographic area of the EW and the attainment of those SCLs occurs in a reasonable restoration timeframe."	Change not made, for consistency with EPA-approved Appendix A. Footnote also updated, for consistency with Appendix A.	
44	9.1.1.2	9-4	Make the following change to the "Model Toxics Control Act" paragraph: "Sediment sites under MTCA are regulated by the SMS, which provides risk thresholds for specified exposure pathways (e.g., $1 \times 10^{-6}$ excess cancer risk threshold for individual carcinogens to achieve the SCO), methods for setting the SCLs (analogous to PRGs in this FS) to appropriate levels up to the CSL (e.g., adjusting to regional background levels), and specific target concentrations for individual chemicals for protection of the benthic community."	Revised accordingly.	
45	9.1.1.2	9-5	Make the following changes: "In either case, the restoration timeframe needed to meet the cleanup levels could be extended beyond 10 years if determined to be appropriate by EPA. and Appendix A"	This paragraph deleted and text from EPA-approved Appendix A included in its place.	



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46	9.1.1.2	9-5	<del>"As discussed in Appendix A, a</del>		Revision not made, for consistency with EPA-approved Appendix A.
47	Table 9-1	9-30	a) In the Total PCBs (top) table, make the following changes to the table header row: <del>"Human Health PRG (Natural Background) = 2,3.5"</del> <sup>b</sup> b) Make the following changes to footnote 'b': <del>"The Natural background values presented for total PCBs are the UCL95 using the OSV Bold Survey (DMMP 2009) dataset (LDW ROD; EPA 2014) and the 90/90 UTL using the 'Bold Plus' dataset (Ecology 2017). See Section 4 for detailed rationale."</del> c) In the Dioxin/Furans (bottom) table, make the following changes to the table header row: <del>"Human Health PRG (Natural Background) = 2 or (PQL) = 5"</del> <sup>e</sup> d) Make the following changes to footnote 'e': <del>"PRGs presented for dioxins/furans are the natural background value (UCL95, using the OSV Bold Survey [DMMP 2009] dataset [LDW ROD]; EPA 2014) and the Ecology's PQL value (Ecology 2017). See Section 4 for detailed rationale."</del> e) In the Dioxin/Furans (bottom) table and in the table footnotes, remove the green highlighting indicating achievement of the PQL-based PRG. f) Remove the definition of "90/90 UTL" g) Remove the definition of "PQL"		a) Revised accordingly. b) Footnote revised accordingly. c) Revised accordingly. d) Footnote revised accordingly. Please note that "EPA 2014" is the LDW ROD reference, so it cannot be deleted. e) Green highlight removed in the D/F table. Also removed green color legend. f) Deleted. g) Deleted.
48	Table 9-2	9-31	a) In the Arsenic (top) table, make the following changes to the table header rows: <del>"Netfishing PRG (Natural Background) = 7,11"</del> <sup>b</sup> <del>"Tribal Clamming PRG (Natural Background) = 7,11"</del> <sup>b</sup> b) Make the following changes to footnote 'b': <del>"The Natural background values presented for arsenic are the UCL95 using the OSV Bold Survey (DMMP 2009) dataset (LDW ROD; EPA 2014) and the 90/90 UTL using the 'Bold Plus' dataset (Ecology 2017). See Section 4 for detailed rationale."</del> c) In the Arsenic (top) table and in the table footnotes, remove the green highlighting indicating achievement of the arsenic background-based PRG. d) Remove the definition of "90/90 UTL"		a) Revised accordingly. b) Footnote revised accordingly. c) Green highlight removed in the As table. Also removed green color legend. d) Deleted.

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49	9.3.1	9-33	Make the following change to the third sub-bullet under the RAO 1 main bullet: "However, the action alternatives reduce total PCB SWACs between 87% and 92% at year 40, compared to pre-construction conditions. <del>In addition, if Ecology's guidance for implementing the ARAR is followed for dioxins/furans (which is based on a PQL), PRGs may be achieved if actual concentrations fall at the lower end of incoming sediment concentrations (Section 9.15.1.2)."</del>		Revised accordingly.
50	9.3.1	9-33 to 9-34	Make the following change to the first sub-bullet under the RAO 2 main bullet: "All alternatives, including No Action, may meet this RAO 2 PRG in the long term, depending on incoming sediment concentrations (Section 9.15.1.2). <del>If Ecology's guidance for implementing the ARAR is followed, then all alternatives are predicted to meet and maintain the RAO 2 PRG for arsenic of 11 mg/kg dw (based on Method 90/90 UTL; Ecology 2017) in year 0 (start of construction)."</del>		Revised accordingly.
51	9.3.1	9-34	Make the following change to the fourth sub-bullet under the RAO 2 main bullet: "All action alternative SWACs are below the site-wide and clamming area PRG for arsenic (7 mg/kg dw) immediately after construction, and may also maintain the PRG in the long term, depending on incoming sediment concentrations (Section 9.15.1.2). <del>If Ecology's guidance for implementing the ARAR is followed, then all alternatives are predicted to meet and maintain the site-wide and clamming area PRG for arsenic (11 mg/kg dw). Also, SWACs for cPAHs remain below the sitewide netfishing PRG of 380 µg TEQ/kg dw for all action alternatives in the long term."</del>		Revised accordingly.
52	9.4.1	9-50	Make the following change to the second bullet: "For human health direct contact (RAO 2) for arsenic, this alternative is not predicted to meet the natural background-based RAO 2 PRG for arsenic of 7 mg/kg dw, but may achieve this value in the long term, depending on the concentration of incoming Green River sediments (Section 9.15.1.2). <del>If Ecology's guidance for implementing the ARAR is followed, then the alternative meets site-wide and clamming area PRGs for arsenic (11 mg/kg dw) at year 0 (start of construction)."</del>		Revised accordingly.

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53	9.4.5.3	9-54	Make the following change: "The No Action Alternative is not predicted to achieve 7 mg/kg dw for arsenic either sitewide nor in clamming exposure areas; however, this alternative may achieve 7 mg/kg dw in the long term, depending on the concentration of incoming Green River sediments (Section 9.15.1.2). <del>If Ecology's guidance for implementing the ARAR is followed, then the alternative meets site-wide and clamming area PRGs for arsenic (11 mg/kg dw) at the baseline condition and is predicted to remain below this PRG over the long term.</del> "	Revised accordingly.	
54	Table 9-8	9-55 to 9-56	a) Make the following change in the first column: "Natural Background <del>or PQL</del> -based PRGs" b) Make the following change to footnote 'c': "No alternatives are predicted to meet either the natural background concentration for dioxins/furans of 2 ng TEQ/kg dw (calculated based on the UCL95 on the mean, using the OSV Bold Survey [DMMP 2009] dataset [LDW ROD]; EPA 2014), <del>nor the PQL concentration for dioxins/furans of 5 ng TEQ/kg dw (Table 11-1 of the SCUM II [Ecology 2017]).</del> " c) Make the following change to footnote 'd': "Alternatives 1A(12) through 3E(7.5) are predicted to meet natural background based PRG for arsenic of 7 mg/kg dw (calculated based on the UCL95; LDW ROD 2014) immediately after construction, and may maintain this value in the long term, depending on concentrations in Green River sediments. <del>All alternatives also achieve the Ecology SCUM II natural background based PRG for arsenic of 11 mg/kg dw (based on Method 90/90 UTL; Ecology 2017) and the long-term model-predicted concentration range (associated with an excess cancer risk range between <math>1 \times 10^{-5}</math> and <math>1 \times 10^{-6}</math>) immediately after construction (for the action alternatives).</del> " d) Remove the definition of "90/90 UTL" e) Remove the definition of "PQL"	a) Revised accordingly. b) Footnote revised accordingly. c) Footnote revised accordingly. d) Deleted. e) Deleted.	
55	9.5.1	9-59	Make the following change to the second bullet: "For human health direct contact (RAO 2) for arsenic, this alternative is predicted to achieve the netfishing and clamming PRGs immediately after construction completion, and it may also achieve the PRG in the long term, depending on the concentration of incoming Green River sediments (Section 9.15.1.2). <del>If Ecology's guidance for implementing the ARAR is followed, then the alternative meets site-wide and clamming area PRGs for arsenic (11 mg/kg dw) at year 0 (start of construction).</del> "	Revised accordingly.	
56	9.5.2	9-61	Make the following change: "In either case, the timeframe needed to meet the cleanup levels could be extended beyond 10 years if determined to be appropriate by EPA.	Change not made, but text revised, for consistency with EPA-approved Appendix A.	

New Required Revisions					
Comment #	Section #	Page #	Comment	EWG Comment Response	
57	9.5.5.3	9-69	Make the following change to the first paragraph: "Alternative 1A(12) is predicted to achieve 7 mg/kg dw for arsenic by year 9 (immediately after construction completion) for both site-wide and clamming exposure areas, and may achieve 7 mg/kg dw in the long term, depending on the concentration of incoming Green River sediments (Section 9.15.1.2). <del>If Ecology's guidance for implementing the ARAR is followed, then the alternative meets the site-wide and clamming area PRG for arsenic (11 mg/kg dw) at year 0 (start of construction) and is predicted to remain below this PRG over the long term."</del>	Revised accordingly.	
58	9.6.1	9-72	Make the following change to the second bullet: "For human health direct contact (RAO 2) for arsenic, this alternative is predicted to achieve the netfishing and clamming PRG (7 mg/kg dw) immediately after construction completion, and it may also achieve the PRG in the long term, depending on concentration of incoming Green River sediments (Section 9.15.1.2). <del>If Ecology's guidance for implementing the ARAR is followed, then the alternative meets the site-wide and clamming area PRG for arsenic (11 mg/kg dw) at year 0 (start of construction)."</del>	Revised accordingly.	
59	9.6.2	9-74	Make the following change: "In either case, the timeframe needed to meet the cleanup levels could be extended beyond 10 years consistent with the substantive requirements of an SRZ, as defined by SMS (see Section 4.3.1 and Appendix A)."	Change not made, but text revised, for consistency with EPA-approved Appendix A.	
60	9.6.5.3	9-80	Make the following change to the first paragraph: "Alternative 1B(12) is also predicted to achieve 7 mg/kg dw for arsenic by year 9 (immediately after construction completion) for both site-wide and clamming exposure areas, and may achieve 7 mg/kg dw in the long term, depending on net incoming sediment concentration (Section 9.15.1.2). <del>If Ecology's guidance for implementing the ARAR is followed, then the alternative meets the site-wide and clamming area PRG for arsenic (11 mg/kg dw) at year 0 (start of construction) and is predicted to remain below this PRG over the long term."</del>	Revised accordingly.	
61	9.7.1	9-84	Make the following change to the second bullet: "For human health direct contact (RAO 2) for arsenic, this alternative is predicted to achieve the netfishing and clamming PRG (7 mg/kg dw) immediately after construction completion, and it may also achieve the PRG in the long term, depending on concentration of incoming Green River sediments (Section 9.15.1.2). <del>If Ecology's guidance for implementing the ARAR is followed, then the alternative meets the site-wide and clamming area PRG for arsenic (11 mg/kg dw) at year 0 (start of construction)."</del>	Revised accordingly.	

New Required Revisions					
Comment #	Section #	Page #	Comment		EWG Comment Response
62	9.7.2	9-85	Make the following change: "In either case, the timeframe needed to meet the cleanup levels could be extended beyond 10 years consistent with the substantive requirements of an SRZ, as defined by SMS (see Section 4.3.1 and Appendix A)."		Change not made, but text revised, for consistency with EPA-approved Appendix A.
63	9.7.5.3	9-92	Make the following change to the first paragraph: "Alternative 1C+(12) is also predicted to achieve 7 mg/kg dw for arsenic by year 9 (immediately after construction completion) for both site-wide and clamming exposure areas, and may achieve 7 mg/kg dw in the long term, depending on concentration of incoming Green River sediments (Section 9.15.1.2). <del>If Ecology's guidance for implementing the ARAR is followed, then the alternative meets the site-wide and clamming area PRG for arsenic (11 mg/kg dw) at year 0 (start of construction) and is predicted to remain below this PRG over the long term."</del>		Revised accordingly.
64	9.8.1	9-96	Make the following change to the first bullet on this page: "For human health direct contact (RAO 2) for arsenic, this alternative is predicted to achieve the netfishing and clamming PRG (7 mg/kg dw) immediately after construction completion, and it may also achieve the PRG in the long term, depending on concentration of incoming Green River sediments (Section 9.15.1.2). <del>If Ecology's guidance for implementing the ARAR is followed, then the alternative meets the site-wide and clamming area PRG for arsenic (11 mg/kg dw) at year 0 (start of construction)."</del>		Revised accordingly.
65	9.8.2	9-97	Make the following change: "In either case, the timeframe needed to meet the cleanup levels could be extended beyond 10 years consistent with the substantive requirements of an SRZ, as defined by SMS (see Section 4.3.1 and Appendix A)."		Change not made, but text revised, for consistency with EPA-approved Appendix A.
66	9.8.5.3	9-103	Make the following change: "Alternative 2B(12) is also predicted to achieve 7 mg/kg dw for arsenic by year 10 (immediately after construction completion) for both site-wide and clamming exposure areas, and may achieve 7 mg/kg dw in the long term, depending on concentration of incoming Green River sediments (Section 9.15.1.2). <del>If Ecology's guidance for implementing the ARAR is followed, then the alternative meets the site-wide and clamming area PRG for arsenic (11 mg/kg dw) at year 0 (start of construction) and is predicted to remain below this PRG over the long term."</del>		Revised accordingly.

New Required Revisions					
Comment #	Section #	Page #	Comment	EWG Comment Response	
67	9.9.1	9-107	Make the following change to the second bullet: "For human health direct contact (RAO 2) for arsenic, this alternative is predicted to achieve the netfishing and clamming PRG (7 mg/kg dw) immediately after construction completion, and it may also achieve the PRG in the long term, depending on concentration of incoming Green River sediments (Section 9.15.1.2). <del>If Ecology's guidance for implementing the ARAR is followed, then the alternative meets the site-wide and clamming area PRG for arsenic (11 mg/kg dw) at year 0 (start of construction).</del> "	Revised accordingly.	
68	9.9.2	9-108	Make the following change: "In either case, the timeframe needed to meet the cleanup levels could be extended beyond 10 years if determined to be appropriate by EPA.	Change not made, but text revised, for consistency with EPA-approved Appendix A.	
69	9.9.5.3	9-115	Make the following change to the first full paragraph: "Alternative 2C+(12) is also predicted to achieve 7 mg/kg dw for arsenic by year 10 (immediately after construction completion) for both site-wide and clamming exposure areas, and may achieve 7 mg/kg dw in the long term, depending on concentration of incoming Green River sediments (Section 9.15.1.2). <del>If Ecology's guidance for implementing the ARAR is followed, then the alternative meets the site-wide and clamming area PRG for arsenic (11 mg/kg dw) at year 0 (start of construction) and is predicted to remain below this PRG over the long term.</del> "	Revised accordingly.	
70	9.10.1	9-119	Make the following change to the second bullet: "For human health direct contact (RAO 2) for arsenic, this alternative is predicted to achieve the netfishing and clamming PRG (7 mg/kg dw) immediately after construction completion, and it may also achieve the PRG in the long term, depending on concentration of incoming Green River sediments (Section 9.15.1.2). <del>If Ecology's guidance for implementing the ARAR is followed, then the alternative meets the site-wide and clamming area PRG for arsenic (11 mg/kg dw) at year 0 (start of construction).</del> "	Revised accordingly.	
71	9.10.2	9-120	Make the following change: "In either case, the timeframe needed to meet the cleanup levels could be extended beyond 10 years if determined to be appropriate by EPA.	Change not made, but text revised, for consistency with EPA-approved Appendix A.	

New Required Revisions					
Comment #	Section #	Page #	Comment	EWG Comment Response	
72	9.10.5.3	9-126 to 9-127	Make the following change: "Alternative 3B(12) is also predicted to achieve 7 mg/kg dw for arsenic by year 10 (immediately after construction completion) for both site-wide and clamming exposure areas, and may achieve 7 mg/kg dw in the long term, depending on concentration of incoming Green River sediments (Section 9.15.1.2). <del>If Ecology's guidance for implementing the ARAR is followed, then the alternative meets the site-wide and clamming area PRG for arsenic (11 mg/kg dw) at year 0 (start of construction) and is predicted to remain below this PRG over the long term."</del>	Revised accordingly.	
73	9.11.1	9-130	Make the following change to the second bullet: "For human health direct contact (RAO 2) for arsenic, this alternative is predicted to achieve the netfishing and clamming PRG (7 mg/kg dw) immediately after construction completion, and it may also achieve the PRG in the long term, depending on concentration of incoming Green River sediments (Section 9.15.1.2). <del>If Ecology's guidance for implementing the ARAR is followed, then the alternative meets the site-wide and clamming area PRG for arsenic (11 mg/kg dw) at year 0 (start of construction)."</del>	Revised accordingly.	
74	9.11.2	9-131	Make the following change: "In either case, the timeframe needed to meet the cleanup levels could be extended beyond 10 years consistent with the substantive requirements of an SRZ, as defined by SMS (see Section 4.3.1 and Appendix A)."	Change not made, but text revised, for consistency with EPA-approved Appendix A.	
75	9.11.5.3	9-138	Make the following change: "Alternative 3C+(12) is also predicted to achieve 7 mg/kg dw for arsenic by year 10 (immediately after construction completion) for both site-wide and clamming exposure areas, and may achieve 7 mg/kg dw in the long term, depending on concentration of incoming Green River sediments (Section 9.15.1.2). <del>If Ecology's guidance for implementing the ARAR is followed, then the alternative meets the site-wide and clamming area PRG for arsenic (11 mg/kg dw) at year 0 (start of construction) and is predicted to remain below this PRG over the long term."</del>	Revised accordingly.	
76	9.12.1	9-140	Make the following change to the second bullet: "For human health direct contact (RAO 2) for arsenic, this alternative is predicted to achieve the netfishing and clamming PRG (7 mg/kg dw) immediately after construction completion, and it may also achieve the PRG in the long term, depending on concentration of incoming Green River sediments (Section 9.15.1.2). <del>If Ecology's guidance for implementing the ARAR is followed, then the alternative meets the site-wide and clamming area PRG for arsenic (11 mg/kg dw) at year 0 (start of construction)."</del>	Revised accordingly.	

New Required Revisions					
Comment #	Section #	Page #	Comment	EWG Comment Response	
77	9.12.2	9-143	Make the following change: "In either case, the timeframe needed to meet the cleanup levels could be extended beyond 10 years if determined to be appropriate by EPA.	Change not made, but text revised, for consistency with EPA-approved Appendix A.	
78	9.12.5.3	9-149	Make the following change: "Alternative 2C+(7.5) is also predicted to achieve 7 mg/kg dw for arsenic by year 11 (immediately after construction completion) for both site-wide and clamming exposure areas, and may achieve 7 mg/kg dw in the long term, depending on concentration of incoming Green River sediments (Section 9.15.1.2). <del>If Ecology's guidance for implementing the ARAR is followed, then the alternative meets the site-wide and clamming area PRG for arsenic (11 mg/kg dw) at year 0 (start of construction) and is predicted to remain below this PRG over the long term."</del>	Revised accordingly.	
79	9.13.1	9-153	Make the following change to the second bullet: "For human health direct contact (RAO 2) for arsenic, this alternative is predicted to achieve the netfishing and clamming PRG (7 mg/kg dw) immediately after construction completion, and it may also achieve the PRG in the long term, depending on concentration of incoming Green River sediments (Section 9.15.1.2). <del>If Ecology's guidance for implementing the ARAR is followed, then the alternative meets the site-wide and clamming area PRG for arsenic (11 mg/kg dw) at year 0 (start of construction)."</del>	Revised accordingly.	
80	9.13.2	9-154	Make the following change: "In either case, the timeframe needed to meet the cleanup levels could be extended beyond 10 years if determined to be appropriate by EPA.	Change not made, but text revised, for consistency with EPA-approved Appendix A.	
81	9.13.5.3	9-160	Make the following change: "Alternative 3E(7.5) is also predicted to achieve 7 mg/kg dw for arsenic in 13 years (immediately after construction completion) for both site-wide and clamming exposure areas, and may achieve 7 mg/kg dw in the long term, depending on concentration of incoming Green River sediments (Section 9.15.1.2). <del>If Ecology's guidance for implementing the ARAR is followed, then the alternative meets the site-wide and clamming area PRG for arsenic (11 mg/kg dw) at year 0 (start of construction) and is predicted to remain below this PRG over the long term."</del>	Revised accordingly.	



New Required Revisions					
Comment #	Section #	Page #	Comment	EWG Comment Response	
82	9.15.1.2	9-170 to 9-171	Remove the following paragraph: <del>"The uncertainty of SWAC comparisons is further reinforced when considering analytical precision and field variability. SCUM II (Section 13.6; Ecology 2017), acknowledges that "very low concentrations may be used to establish and measure compliance with bioaccumulation-based cleanup standards and those may have significant analytical variability, as well as field variability." Based on typical analytical relative percent differences and field variability, any individual or mean value within 20% of the cleanup standard is considered indistinguishable from the cleanup standard and, therefore, the measured value is in compliance."</del>	Removed only the second sentence referencing SCUM II. First and third sentences retained because they do not reference SCUM II and because the remaining text is part of the uncertainty discussions in this section.	
83	9.15.1.2	9-171	Make the following changes: <del>"For dioxins/furans, the low and high bounding range of incoming sediment concentrations is 2 ng TEQ/kg dw to 8 ng TEQ/kg dw. All active alternatives achieve the long-term model predicted concentration, which for the base case is 6 ng TEQ/kg dw. However, if Ecology's guidance for implementing the ARAR is followed, a dioxins/furans PQL-based PRG may be achieved if actual concentrations fall at the lower end of incoming sediment concentrations."</del>	Revised accordingly.	
84	9.15.2	9-173	Make the following changes: <del>"Dredging results in the release of contaminants to the water column (which can elevate fish and shellfish tissue contaminant concentrations over the short term) and dredge residuals to the sediment surface. As described in Appendix A, full removal of all contaminated sediment is not possible in many areas near structures, where setbacks and stable slopes required for structure protection will leave some contaminated sediments behind."</del>	Change not made, for consistency with EPA-approved Appendix A.	
85	Figure 9-1a		a) Remove the line associated with the 3.5 ug/kg dw. b) Remove the references to 90/90 UTL in the figure and figure notes.	a) Removed line for 3.5 ug/kg dw. b) Removed 90/90 UTL references.	
86	Figure 9-1b		a) Remove the line associated with the 5 ng TEQ/kg dw . b) Remove the references to PQL and SCUM II in the figure and figure notes.	a) Removed line for 5 ng TEQ/kg dw. b) Removed PQL and SCUM references.	
87	Figure 9-1c		a) Remove the line associated with the 11 mg/kg dw. b) Remove the references to 90/90 UTL in the figure and figure notes.	a) Removed line for 11 mg/kg dw. b) Removed 90/90 UTL references.	
88	Figure 9-2a		a) Remove the line associated with the 11 mg/kg dw. b) Remove the references to 90/90 UTL in the figure and figure notes.	a) Removed line for 11 mg/kg dw. b) Removed 90/90 UTL references.	
89	10.1.2	10-6	Make the following changes to the last paragraph: <del>"In either case, the timeframe needed to meet the cleanup levels could be extended beyond 10 years if determined to be appropriate by EPA."</del>	Change not made, but text revised, for consistency with EPA-approved Appendix A.	
90	10.1.2	10-6	Remove footnote 149: <del>"As discussed in Appendix A, a</del>	Revised footnote accordingly.	

New Required Revisions					
Comment #	Section #	Page #	Comment	EWG Comment Response	
91	Table 10-1	10-10	a) Make the following changes to footnote 'I': "All alternatives, including the No Action Alternative, may meet the PRG in the long term, depending on actual site conditions. All alternatives also achieve the Ecology SCUM II natural background-based PRG for arsenic of 11 mg/kg dw (based on Method 90/90 UTL; Ecology 2017)." b) Remove the definitions for PQL and SCUM II.	a) Revised footnote accordingly. b) Removed definitions.	
92	11.1.2	11-9	Remove footnote 158: "Note that the method for calculating some background and PQL values in this FS differs compared to standard Washington State methodologies presented in SCUM II (Ecology 2017). See FS Table 4-4."	Removed footnote.	
93	11.1.2	11-10	Make the following changes to the first paragraph: "In either case, the timeframe needed to meet the cleanup levels could be extended beyond 10 years if determined to be appropriate by EPA.	Change not made, but text revised, for consistency with EPA-approved Appendix A.	
94	11.2	11-20 to 11-22	Change the numbering in this section to be 1 through 11.	Done.	
95	11.3	11-25	Make the following change to the first sub-bullet: "Dredging results in the release of contaminants to the water column (which can maintain elevated fish and shellfish tissue contaminant concentrations over the short term) and dredge residuals to the sediment surface. As described in Appendix A, full removal of all contaminated sediment is not possible in many areas near structures, where setbacks and stable slopes required for structure protection will leave some contaminated sediments behind."	Change not made, for consistency with EPA-approved Appendix A.	
96	Appendix A		Make the revisions as shown in the attached red-line/strike-out version of Appendix A.	Appendix A has been revised, in accordance with the dispute resolution process in coordination with EPA.	
97	Appendix B, Part 5	23 to 24	Make the following changes: "It is important to note that the lower predicted concentrations of the ranges stated above are below that which are predicted to be achieved on a site-wide basis due to removal limitations associated with structural setbacks and the presence of riprap keyways and underpier slopes (see FS Appendix A, Section 4.1.1). The site-wide lowest achievable total PCBs spatially weighted average concentration (SWAC) was estimated to be 57 µg/kg dw, with an effective bioavailable concentration of 34 µg/kg dw (FS Appendix A)."	Text not revised, for consistency with EPA-approved Appendix A.	

New Required Revisions				
Comment #	Section #	Page #	Comment	EWG Comment Response
98	Appendix B, Part 5	25	Make the following change: “Note that, as discussed above, these concentrations are below the site-wide lowest possible achievable SWAC when considering constructability <del>(FS Appendix A);</del> concentrations this low may or may not be observed in a given area of the EW as part of confirmatory sampling.”	Text not revised, for consistency with EPA-approved Appendix A.